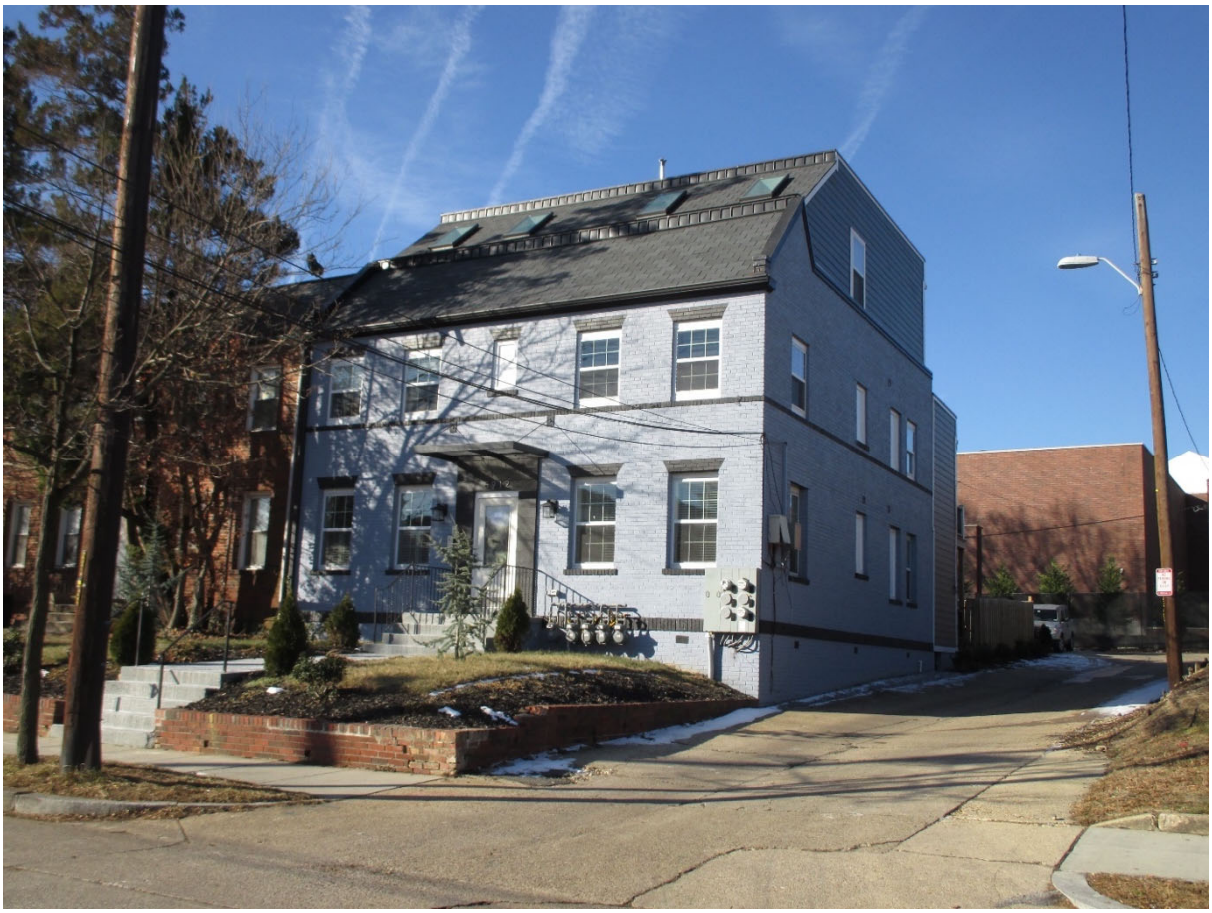
INSPECTION REPORT

5912 9th Street, NW Washington, DC 20011

SQUARE: 2986 LOT: 0025



View of 5912 9th Street, NW from the street.

PROJECT DESCRIPTION: The property in question is in the RA-1 zoning district in NW Washington, DC and until 2016 was improved by a two-story, 4-unit apartment building. The building is not sprinklered and classified as Type V construction for Use Group R-2 occupancy.

In 2015, the developer formed an LLC and bought the property to renovate and convert to condominiums. In October 2015, permit (B1600869) was issued for *Renovation and alterations: exterior and interior. Modify the interior layout of the existing four-unit apartment building*. In November 2015, a permit application (B1601425) was opened for *alteration and a third story addition.* The Online Building Permit Application Tracking (OBPAT) database shows the application initiated on 11/04/2016 and not pursued. The record shows no evidence that the application filed any documents nor any reviews made.

A third-floor addition (a 5th unit) was added to the structure (see above photo) without a recorded or approved Building Permit. Likewise, there is no associated soils or engineering study that verifies that the existing foundation can properly support the new third story or if any life safety codes or fire separation requirements were taken into consideration.

There are other approved permits that seek to incorporate the non-permitted work by reference in the 'description of work', but it is clear from the record found on the Property Information Verification

System (PIVS) that Third Party Oversight overturned the Building Final and Zoning placed a Hold on the issuance of a Certificate of Occupancy that is conditional on the above noted application found in OBPAT. Also noted in "Surdocs" are various discrepancies that appear to be associated with a quick revision to as-built documents and the need to record 4 of the 5 units.

While there are no current Correction Orders noted for the property, DCRA seems to be aware of the conflict between the permitted work and the as-built condition. The Office of the General Counsel (OGC) has worked with the Permit Operations Division (POD) to revoke permit B1713076 that seeks: *Alteration and repair to unit 5, kitchen renovation and repair existing deck*

PERMIT, APPLICATION AND INSPECTION HISTORY:

B1713076 Issued 9/7/2017. *Alteration and repair to unit 5, kitchen renovation and repair existing deck.* Notices:

DO NOT APPROVE THE FINAL INSPECTION WITHOUT APPROVAL FROM THE ZONING ADMINISTRATOR, DEPUTY ZONING ADMINISTRATOR, OR SUPERVISORY ZONING TECHNICIAN.

A Zoning Compliance concern has been raised, and it must be reviewed by zoning. The permit is scheduled for Revocation. 01/12/18

B1601425 Accepted 11/4/2015, but not pursued. *Alteration repair and add addition on the 3rd floor*.

B1600869 Initiated 10/22/2015, Issued 10/23/2015. *Renovation and alterations exterior and interior. Modify the interior layout of the existing **four-unit** apartment building*.

- 10/27/2016 Framing/Insulation inspection approved (Attachment 1)
- 11/02/2016 Building final inspection approved (Attachment 2)

D1600028 Initiated and Issued 10/13/2015. *Demolition interior wall, remove the drywall, door, flooring, windows and mechanical, electrical and plumbing*.

B1600449 Initiated and Issued 10/13/2015. *Make five-car parking pad*.

P1600859 Issued 10/28/2015. *5 Bath Tubs, 5 Dishwashers, 2 Hose Bibbs, 5 Ice makers, 5 Showers, 5 Sinks, 5 Washer Boxes 10 Water closets, 5 Gas Ranges and 5 Water Heaters.*

- 10/27/2016 Plumbing rough-in inspection approved (Attachment 1)
- 11/02/2016 Plumbing final inspection approved (Attachment 2)

E1601453 Issued 11/18/2015. *250 Group 1- Wiring Only (Receptacles and Switch Outlets), 200 Group 2- Fixtures and Lamp holders, 1 Group 8- 401 through 800 Amp Range, 6 Group 8- Up through 200 Amp Range, 5 Group 13- Central A/C System Up through 5 tons (Residential), 5 Group 13- Clothes Dryer (Residential), 5 Group 13- Dishwasher (Residential), 15 Group 13- Fire Alarm Smoke and Heat Detectors, 5 Group 13- Garbage Disposal (Residential), 5 Group 13- Hot Water Heater (Residential) and 7 Group 13- Replacement of Feeder Conductors*. Conditions/ Restrictions noted: 4 Unit apartment renovation and repair as per plans.

- 10/27/2016 Electrical rough-in inspection approved (Attachment 1)
- 11/02/2016 Temporary Pending Final (TPF) inspection approved (Attachment 3)
- 11/02/2016 Electrical final inspection approved (Attachment 2)

AR74026423 Issued 01/04/2016. *5 Class E- 0 to 120,000BTU/h*

Description of work: Install as per approved plans

- 10/27/2016 Mechanical rough-in inspection approved (Attachment 1)
- 11/02/2016 Mechanical final inspection approved (Attachment 2)

CO1700390 Issued 11/14/2016 for *Certificate of Occupancy of Apartment Building – 4 Units*

SITE VISIT AND OBSERVATIONS:

Findings are as follows (See Appendix A for specific code references):

Building:

1.	12A DCMR 105.1	Work performed beyond the scope of permit- Building
2.	12A DCMR 109.3.1.1	Failure to obtain the required footing inspection- Deck (Common).
3.	12A DCMR 110.1	Failure to obtain a required Certificate of Occupancy for 5 units
4.	2012 IBC 708.3	Fire partitions do not have required 1-hour fire resistive rating (Common).
5.	2012 IBC 708.4	Fire partitions are not continuous (Common).
6.	2012 IBC 714.3.2	Membrane penetrations are not properly sealed at annular space (Common).
7.	2012 IBC 717.5.4	Duct at mechanical unit is not protected at rated assembly (Units 1 & 2).
8.	2012 IBC 717.6.2(2)	Air transfer openings are not protected at fire rated assembly (Common).
9.	2012 IBC 718.2.5	Tub drain fire blocking not installed at floor/ceiling assembly (Unit 2/4).
10.	2012 IBC 718.4.2	Draftstopping is not installed in line with dwelling unit separations (Units 3 & 4/5).
11.	2012 IBC 1012.6	Handrails are not properly returned at deck stairs (Common)
12.	2012 IBC 1405.1	Flashing is not installed to prevent water intrusion at parapet (Common).
13.	2012 IBC 1604.8.3	Decks are not positively anchored at deck joist to band boards (Common).
14.	2012 IBC 1029.1	Bedrooms do not provide emergency escape to public way (Unit 1 & 3).

Plumbing:

1.	12A DCMR 105.1	Work performed beyond the scope of permit- Plumbing
2.	2012 IPC 305.4	Water and drain lines are not protected at crawl space. (Common)
3.	2012 IPC 606.3	Shut off valve is not accessible and located behind unit (Unit 5).
4.	2012 IPC 608.15.4.2	Exterior hose bibs do not have required vacuum breakers (Common)
5.	2012 IPC 1002.3(5)	Installed “S” traps are prohibited.
6.	2012 IPC 802.1.6	Waste lines at dishwasher are not securely mounted to underside of sink or counter.
7.	2012 IFGC 404.11	Gas line connections are not protected from corrosion at the meter

Mechanical:

1.	12A DCMR 105.1	Work performed beyond the scope of permit- Mechanical
2.	2012 IMC 501.3.1(3)	Exhaust duct is located to close to property line (Units 2 & 4)
3.	2012 IMC 504.2	Exhaust duct is not sealed and is located within the rated assembly. (Common)
4.	2012 IMC 504.6.5	Exhaust duct length is not properly identified. (Common)
5.	2012 IMC 604.6	Duct insulation is not cut back at wall/ceiling penetrations. (Common)
6.	2012 IMC 607.6.2	Ducts and air transfer openings do not have required dampers. (Common)

Electrical:

1.	12A DCMR 105.1	Work performed beyond the scope of permit- Electrical
2.	2011 NEC 300.21	Electrical devices are not installed per UL designs at rated assemblies. (Common)
3.	2011 NEC 314.20	Outlet boxes are set back more than ¼ in to finished surface (Common).
4.	2011 NEC 314.23(A)	Junction box at mechanical unit is not secured (Common).
5.	2011 NEC 314.25	Receptacle does not have proper cover at fire alarm

Energy Conservation:

1.	2012 IECC C402.4.4	Exterior doors are not properly sealed. (Common)
2.	2012 IECC C402.4.7	Exterior door at vestibule is not self-closing. (Common)

SUMMARY OF BUILDING PERMIT FINDINGS:

The building code requires that dwelling units have a minimum 1-hour separation. This type of separation is known as a fire-rated partition. All rated assemblies are required to be tested in accordance with UL standards in order to be determined to meet the minimum of specified rating. There are several aspects noted in the conditions of this property that fail to meet common UL requirements:

1. The fire partitions are not continuous.
2. The annular space is not properly sealed for devices that penetrate this fire rated membrane.
3. Insulation has been installed around HVAC ducts penetrating the rated assembly.
4. Proper dampers are not installed at air transfer openings throughout.

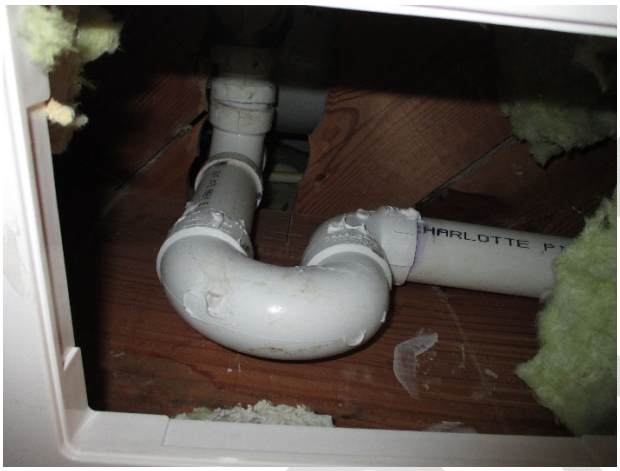
As part of the inspection, gypsum board panels were removed at the ceiling level between units 3 & 4 to expose floor framing to unit 5: no draft stopping was found where required at dwelling unit separations.

Based on the MRIS listing of the property, Units 1 and 3 were listed and sold as two-bedroom units. However, it was found that both units only provide one of the two bedrooms with Building Code required emergency escape and unimpeded access to the public way. The other bedroom could only be considered a den as it does not have any means of escape in a fire nor the required light and ventilation

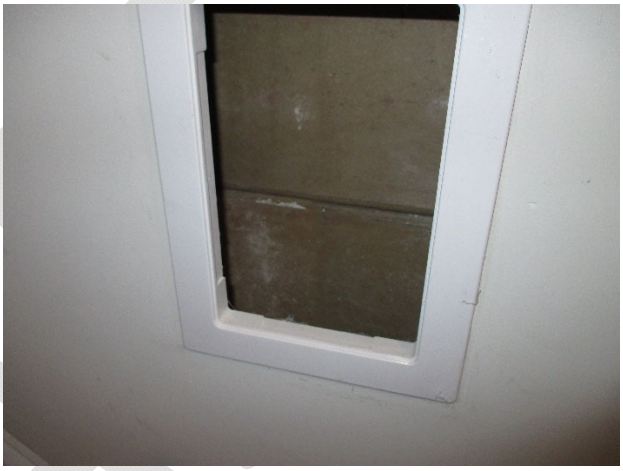
for bedrooms. This has become common in development around the DC area. Permit Application Documents will often show a “den” where a bedroom would be disallowed by the review agency.

Still, it has become common to market these as bedrooms to increase the sale price and return on investment. The Building and Housing Codes are very specific that each bedroom shall have proper light, air and escape to a public way, which can be accomplished by either a window or a door directly to the outdoors.

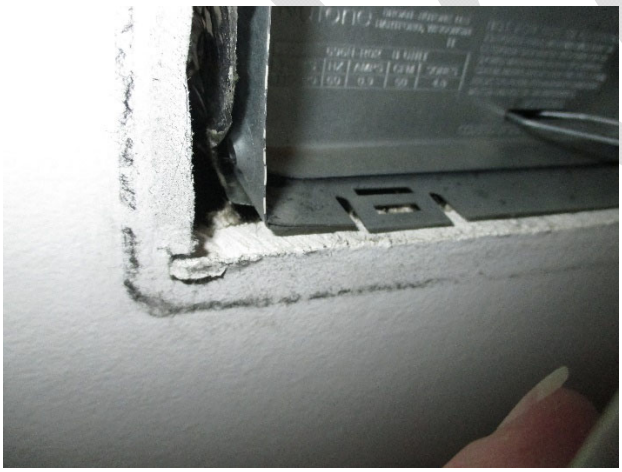
A new deck has been constructed on the rear of the property. There is no evidence of proper permitting for this feature. Deck joist are not properly anchored at the band boards. The handrails to not properly return to the ground or a newel post. The lumber used is not properly rated for ground contact.



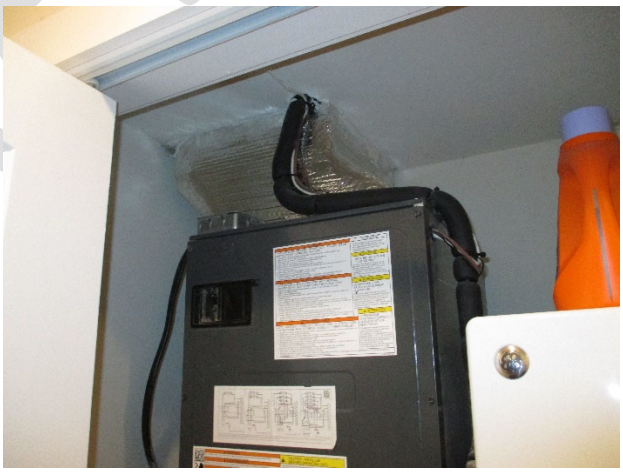
Ceiling opening between unit 2 & 4, No fireblocking installed



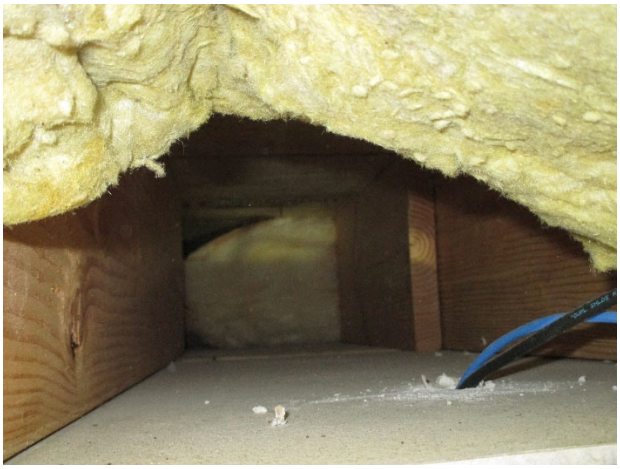
Plastic cover at opening in stair corridor



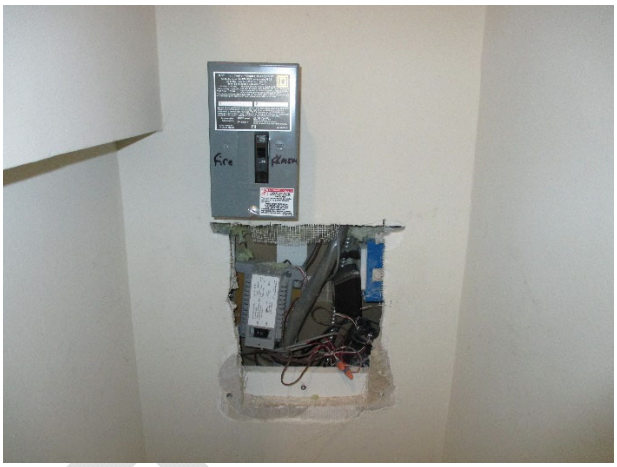
Devices not sealed at penetration of hoizontal membrane



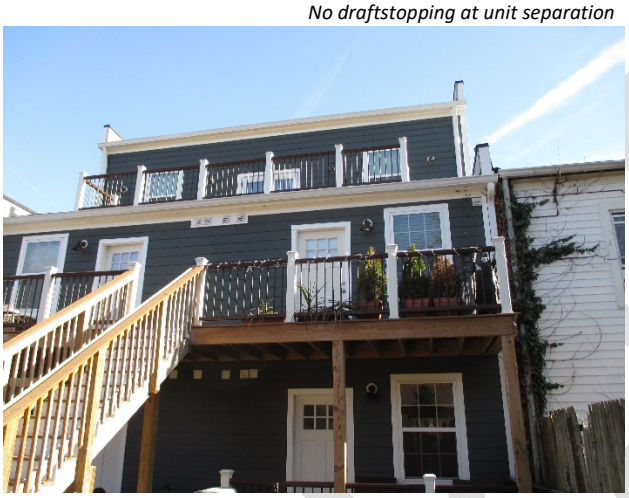
Duct penetration with insluation into fire partition



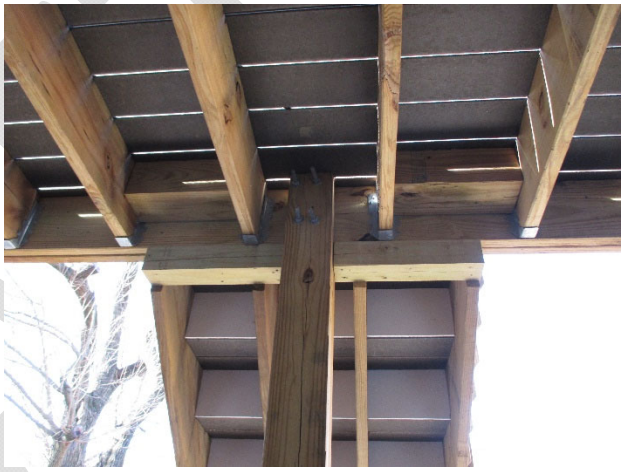
No draftstopping at unit separation



Penetrations at common entry way



Rear view of the property

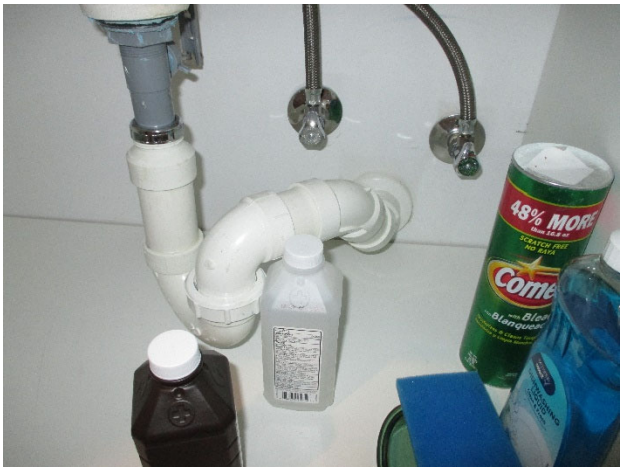


Deck stringer not properly supported

SUMMARY OF PLUMBING ISSUES:

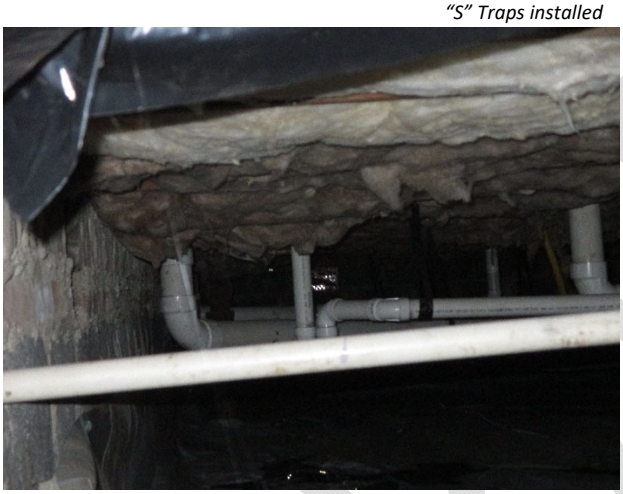
There is water accumulated within the crawl space. Water is draining into this area from the plumbing lines installed at the property. Unit 1 was able to turn on a shower located within the unit to find a steady stream of water falling into the crawl space. It is unclear if this water is a result of supply or drain lines within the structure. The plumbing lines are not insulated within this area and are subject to freezing conditions.

The required shut off valve installed for the water heater in unit five is inaccessible. This valve is located behind the unit and difficult to find at first glance.

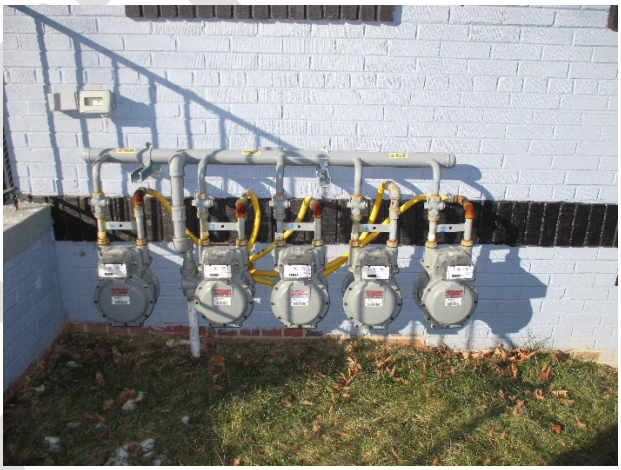


"S" Traps installed

Water falling at crawlspace



Plumbing lines not protected at crawlspace



Gas lines not protected from corrosion

<u>SUMMARY OF ELECTRICAL ISSUES:</u>

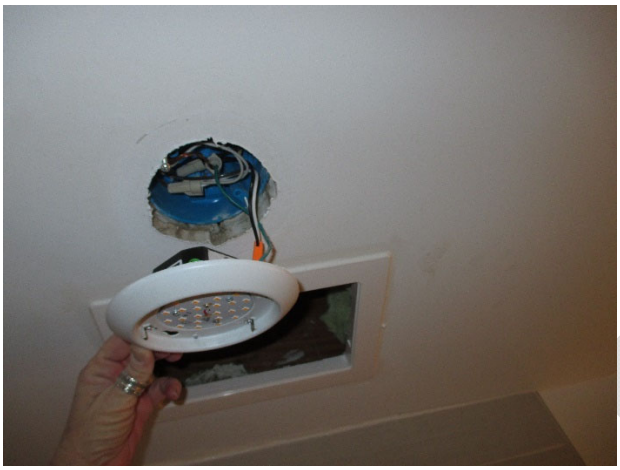
The electrical permit (E1601453) seems to effectively list all items required for this construction, however has specific conditions to limit the scope to work on a 4-unit apartment building.

The recessed light fixtures are not installed correctly. The round boxes (B520A) used to hang these fixtures are properly rated for a 1-hour assembly, however, the UL listing states that "No box shall be located within 4-5 feet of another box".

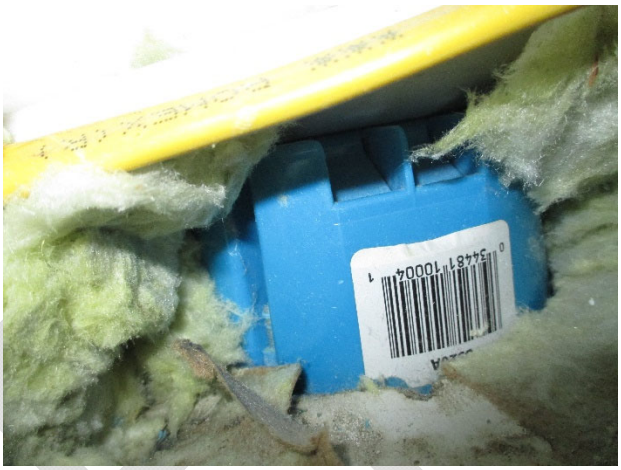
The fixture used at this box provides a UL #E349183 and states "LED retrofit luminaire conversion for use only with UL and C-UL listed recessed incandescent luminaires in accordance with this retrofit kit". The UL for this device, obtained by L-Tech Corp, is for Light-emitting-diode Luminaire Retrofit Kits.

The luminaire in this case is used as a surface mount fixture, not the retro fit type stated and it is not compliant. (see Attachments 4 & 5). The L-TECH Corporation specification sheet obtained from their website states: "LED disc light for square or octagonal junction boxes". The boxes used in this assembly are round and the amount of box fill is questioned. (see Attachment 6)

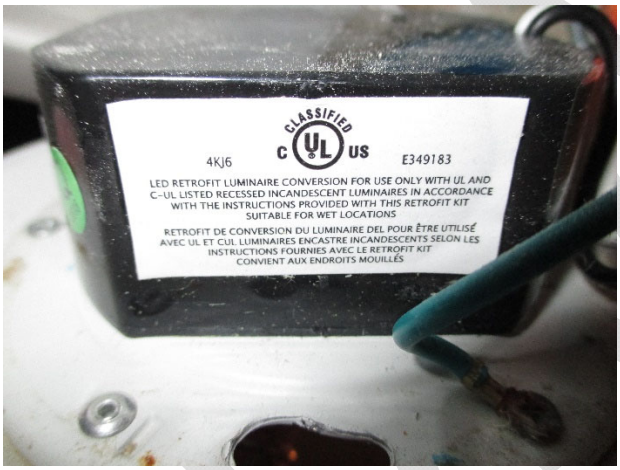
There is a partially installed fire alarm at the front entry of this building. There is no evidence that this system is functioning properly. The electrical permit (E1601453) does not include this system and no inspection records were received. The main control for this device is located in a small alcove area at the left side of the stairway. Wiring is haphazard and is installed with an open junction box within the required rated assembly.



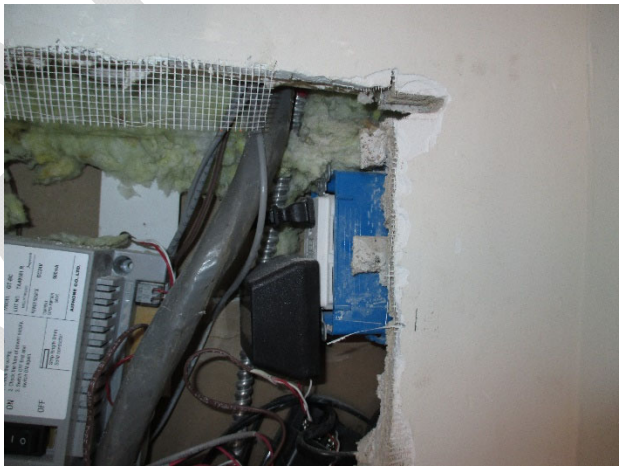
LED Luminaires installed



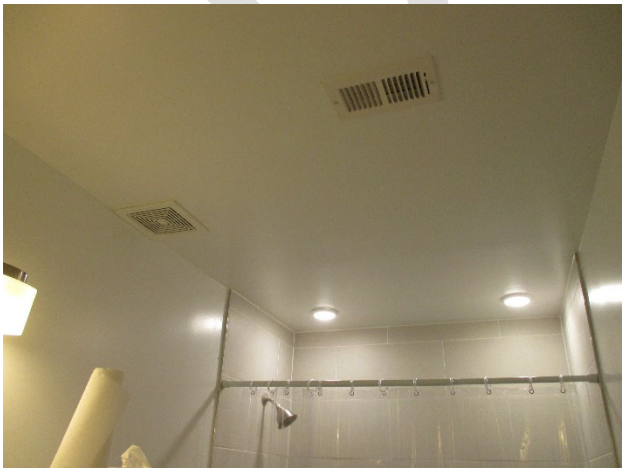
Box used for lighting



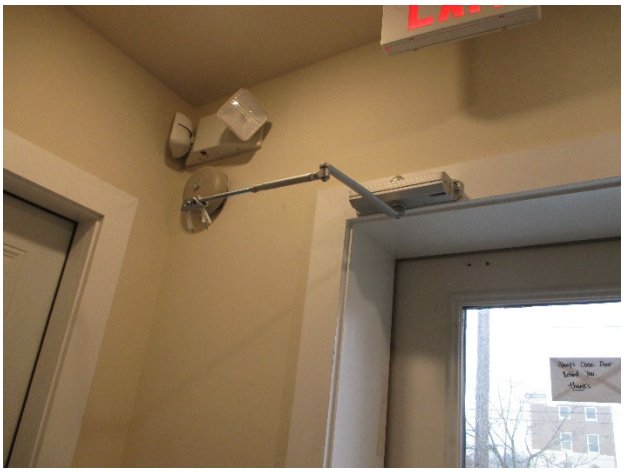
Label and listing on luminaire



Wiring at fire alarm



Light fixtures installed at shower stall

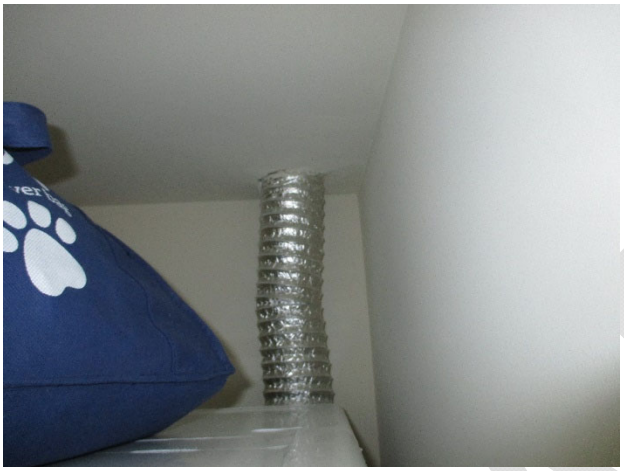


Fire alarm and emergency lighting at front entry

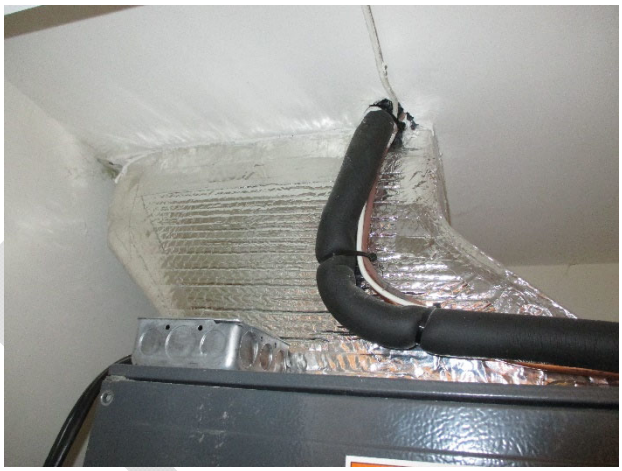
SUMMARY OF MECHANICAL ISSUES:

The flexible duct used for exhaust at the dryer is extended within the rated assembly and is not properly labeled to identify the length of the duct work. For units 2 & 4 this duct is located within 2 feet of the property line.

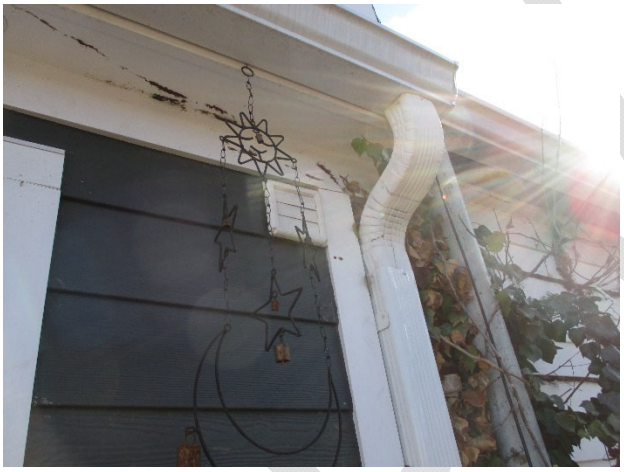
Dampers are required at ducts and air transfer openings that penetrate the membrane of this assembly. There are no ceiling radiation dampers installed throughout.



Dryer duct penetration



Mechanical duct installation



Exhaust duct at property line

Appendix A

12A DCMR (District of Columbia Municipal Regulations)

105.1 Required Permits. Depending on the scope of work, an *owner* or authorized agent who intends to undertake any of the activities set forth in items 1 through 4 below, or to cause any such work to be done, shall first make application to the *code official* and obtain the required permit(s) relevant to the intended work:

1. Construct, enlarge, alter, repair, move, demolish, or change the occupancy of a *building* or other *structure*; or
2. Erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical, or plumbing system, the installation of which is regulated by the *Construction Codes*, or to cause any such work to be done; or
3. Install tower cranes or other similar hoisting devices on public space or private property; or
4. Undertake any other activity regulated by the *Construction Codes*.

109.1 General. Construction or work for which a permit is required shall be subject to inspection by the *code official* and such construction or work shall remain accessible and exposed for inspection purposes until *approved*. It shall be the duty of the permit holder to cause the work to remain accessible and exposed for inspection purposes. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of the *Construction Codes* or of other laws or regulations of the District of Columbia. Regardless of whether the *code official* inspects the construction or work, it is the responsibility of the permit holder and the individual or entity doing the work to comply with all applicable provisions of the *Construction Codes*. The permit holder shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

109.3.1.1 Footing Inspection. Footing inspection is required prior to concrete placement, after trenches are excavated, forms are erected and reinforcement is installed. The inspection shall include confirming that the soil classification, soil compaction and soil bearing capacity specified in the approved plans are consistent with the field conditions and available soils testing data. The appropriate erosion and sediment control measures must be in place and functional.

109.3.1.8 Energy Efficiency and Insulation Inspections.
Inspection of *building* thermal envelope requirements shall be performed before covering them with any other materials. Inspections to determine compliance with the *Energy Conservation Cod*e and the *Green Construction Code* shall be conducted by each trade inspector.

110.1 General Requirement for Certificate of Occupancy.
Except as provided in Section 3203 of the *Zoning Regulations*, no *person* shall use any *structure*, land, or part thereof for any purpose, and no change in use or load shall be made, until a Certificate of Occupancy has been issued stating that the use complies with the applicable *Zoning Regulations* and the *Construction Codes*, including related building, electrical, plumbing, mechanical and fire protection requirements. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of the applicable *Construction Codes*, *Zoning Regulations* or other laws or regulations of the District. The person or entity to which a certificate of occupancy is issued is referred to herein as the "certificate holder." When a change in ownership occurs, a new certificate of occupancy shall be applied for in the name of the new *owner*.

2012 International Building Code

708.3 Fire-resistance rating. Fire partitions shall have a *fire resistance rating* of not less than 1 hour.

708.4 Continuity. Fire partitions shall extend from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, slab or deck above or to the fire-resistance-rated floor/ceiling or roof/ceiling assembly above and shall be securely attached thereto. In combustible construction where the *fire partitions* are not

708.4 Continuity (con't)

required to be continuous to the sheathing, deck or slab, the space between the ceiling and the sheathing, deck or slab above shall be fire blocked or draft stopped in accordance with Sections 718.2 and 718.3 at the partition line. The supporting construction shall be protected to afford the required *fire-resistance rating* of the wall supported, except for walls separating tenant spaces in *covered and open mall buildings*, walls separating *dwelling units*, walls separating *sleeping units* and *corridor* walls, in buildings of Type IIB, IIIB and VB construction.

Exceptions:

1. The wall need not be extended into the crawl space below where the floor above the crawl space has a minimum 1-hour *fire-resistance rating*.

714.3.2 Membrane penetrations. Membrane penetrations shall comply with Section 714.3.1. Where walls or partitions are required to have a *fire-resistance rating*, recessed fixtures shall be installed such that the required fire-resistance will not be reduced.

717.6.2 Membrane penetrations. Ducts and air transfer openings constructed of *approved* materials in accordance with the *Mechanical Code* that penetrate the ceiling membrane of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with one of the following:

1. A shaft enclosure in accordance with Section 713.
2. A *listed ceiling radiation damper* installed at the ceiling line where a duct penetrates the ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly.
3. A *listed ceiling radiation damper* installed at the ceiling line where a diffuser with no duct attached penetrates the ceiling of a fire-resistance-rated floor/ ceiling or roof/ceiling assembly.

718.2.5 Ceiling and floor openings. Where required by Section 712.1.7, Exception 1 of Section 714.4.1.2 or Section 714.4.2, *fireblocking* of the *annular space* around vents, pipes, ducts, chimneys and fireplaces at ceilings and floor levels shall be installed with a material specifically tested in the form and manner intended for use to demonstrate its ability to remain in place and resist the free passage of flame and the products of combustion.

718.4.2 Groups R-1 and R-2. Draftstopping shall be provided in *attics*, mansards, overhangs or other concealed roof spaces of Group R-2 buildings with three or more *dwelling units* and in all Group R-1 buildings. Draftstopping shall be installed above, and in line with, *sleeping unit* and *dwelling unit* separation walls that do not extend to the underside of the roof sheathing above.

1012.6 Handrail extensions. *Handrails* shall return to a wall, *guard* or the walking surface or shall be continuous to the *handrail* of an adjacent *stair flight* or *ramp* run. Where *handrails* are not continuous between *flights,* the *handrails* shall extend horizontally at least 12 inches (305 mm) beyond the top riser and continue to slope for the depth of one tread beyond the bottom riser. At *ramps* where *handrails* are not continuous between runs, the *handrails* shall extend horizontally above the landing 12 inches (305 mm) minimum beyond the top and bottom of *ramp* runs. The extensions of *handrails* shall be in the same direction of the *stair flights* at *stairways* and the *ramp* runs at *ramps*.

1405.4 Flashing. Flashing shall be installed in such a manner so as to prevent moisture from entering the wall or to redirect it to the exterior. Flashing shall be installed at the perimeters of exterior door and window assemblies, penetrations and terminations of exterior wall assemblies, exterior wall intersections with roofs, chimneys, porches, decks, balconies and similar projections and at built-in gutters and similar locations where moisture could enter the wall. Flashing with projecting flanges shall be installed on both sides and the ends of copings, under sills and continuously above projecting trim.

1604.8.3 Decks. Where supported by attachment to an *exterior wall*, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads as applicable. Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal. Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting. Connections of decks with cantilevered framing members to exterior walls or other framing members shall be designed for both of the following:

1. The reactions resulting from the dead load and live load specified in Table 1607.1, or the snow load specified in Section 1608, in accordance with Section 1605, acting on all portions of the deck.
2. The reactions resulting from the dead load and live load specified in Table 1607.1, or the snow load specified in Section 1608, in accordance with Section 1605, acting on the cantilevered portion of the deck, and no live load or snow load on the remaining portion of the deck.

1029.1 General. In addition to the *means of egress* required by this chapter, provisions shall be made for *emergency escape and rescue openings* in Group R-2 occupancies in accordance with Tables 1021.2(1) and 1021.2(2) and Group R-3 occupancies. *Basements* and sleeping rooms below the fourth *story above grade plane* shall have at least one exterior *emergency escape and rescue opening* in accordance with this section. Where *basements* contain one or more sleeping rooms, *emergency escape and rescue openings* shall be required in each sleeping room but shall not be required in adjoining areas of the *basement*. Such openings shall open directly into a *public way* or to a *yard* or *court* that opens to a *public way*.

Exceptions:

1. *Basements* with a ceiling height of less than 80 inches (2032 mm) shall not be required to have *emergency escape and rescue openings*.
2. *Emergency escape and rescue openings* are not required from *basements* or sleeping rooms that have an *exit* door or *exit access* door that opens directly into a *public way* or to a *yard*, *court* or exterior exit balcony that opens to a *public way*.
3. *Basements* without habitable spaces and having no more than 200 square feet (18.6 m2) in floor area shall not be required to have *emergency escape and rescue openings*.

2012 International Plumbing Code

305.4 Freezing. Water, soil and waste pipes shall not be installed outside of a building, in attics or crawl spaces, concealed in outside walls, or in any other place subjected to freezing temperatures unless adequate provision is made to protect such pipes from freezing by insulation or heat or both. Exterior water supply system piping shall be installed not less than 6 inches (152 mm) below the frost line and not less than 12 inches (305 mm) below grade.

606.3 Access to valves. *Access* shall be provided to all full-open valves and shutoff valves.

608.15.4.2 Hose connections. Sillcocks, hose bibbs, wall hydrants and other openings with a hose connection shall be protected by an atmospheric-type or pressure-type vacuum breaker or a permanently attached hose connection vacuum breaker.

802.1.6 Domestic dishwashing machines. Domestic dishwashing machines shall discharge indirectly through an *air gap* or *air break* into a standpipe or waste receptor in accordance with Section 802.2, or discharge into a wye branch fitting on the tailpiece of the kitchen sink or the dishwasher connection of a food waste grinder. The waste line of a domestic dishwashing machine discharging into a kitchen sink tailpiece or food waste grinder shall connect to a deck-mounted *air gap* or the waste line shall rise and be securely fastened to the underside of the sink rim or counter.

1002.3 Prohibited traps. The following types of traps are prohibited:

1. Traps that depend on moving parts to maintain the seal.
2. Bell traps.
3. Crown-vented traps.
4. Traps not integral with a fixture and that depend on interior partitions for the seal, except those traps constructed of an approved material that is resistant to corrosion and degradation.

5. "S" traps.
6. Drum traps.

2012 International Mechanical Code

501.3.1 Location of exhaust outlets. The termination point of exhaust outlets and ducts discharging to the outdoors shall be located with the following minimum distances:

1. For ducts conveying explosive or flammable vapors, fumes or dusts: 30 feet (9144 mm) from property lines; 10 feet (3048 mm) from operable openings into buildings; 6 feet (1829 mm) from exterior walls and roofs; 30 feet (9144 mm) from combustible walls and operable openings into buildings which are in the direction of the exhaust discharge; 10 feet (3048 mm) above adjoining grade.
2. For other product-conveying outlets: 10 feet (3048 mm) from the property lines; 3 feet (914 mm) from exterior walls and roofs; 10 feet (3048 mm) from operable openings into buildings; 10 feet (3048 mm) above adjoining grade.
3. For all environmental air exhaust: 3 feet (914 mm) from property lines; 3 feet (914 mm) from operable openings into buildings for all occupancies other than Group U, and 10 feet (3048 mm) from mechanical air intakes. Such exhaust shall not be considered hazardous or noxious.

504.2 Exhaust penetrations. Where a clothes dryer exhaust duct penetrates a wall or ceiling membrane, the annular space shall be sealed with noncombustible material, *approved* fire caulking or a noncombustible dryer exhaust duct wall receptacle. Ducts that exhaust clothes dryers shall not penetrate or be located within any fire blocking, draft stopping or any wall, floor/ceiling or other assembly required by the *Building Code* to be fire-resistance rated, unless such duct is constructed of galvanized steel or aluminum of the thickness specified in Section 603.4 and the fire-resistance rating is maintained in accordance with the *Building Code*. Fire dampers, combination fire/smoke dampers and any similar devices that will obstruct the exhaust flow shall be prohibited in clothes dryer exhaust ducts.

504.6.5 Length identification. Where the exhaust duct is concealed within the building construction, the equivalent length of the exhaust duct shall be identified on a permanent label or tag. The label or tag shall be located within 6 feet (1829 mm) of the exhaust duct connection.

604.6 Penetration of assemblies. Duct coverings shall not penetrate a wall or floor required to have a fire-resistance rating or required to be fireblocked.

607.6.2 Membrane penetrations. Ducts and air transfer openings constructed of *approved* materials, in accordance with Section 603, that penetrate the ceiling membrane of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with one of the following:

1. A shaft enclosure in accordance with Section 713 of the *Building Code*.
2. A *listed* ceiling radiation damper installed at the ceiling line where a duct penetrates the ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly.
3. A *listed* ceiling radiation damper installed at the ceiling line where a diffuser with no duct attached penetrates the ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly.

2012 International Energy Conservation Code

C402.4.4 Doors and access openings to shafts, chutes, stairways, and elevator lobbies. Doors and access openings from conditioned space to shafts, chutes, stairways and elevator lobbies shall either meet the requirements of Section C402.4.3 or shall be gasketed, weather stripped or sealed.

C402.4.7 Vestibules. All building entrances shall be protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices. Vestibules shall be designed so that in passing through the vestibule it is not necessary for the interior and exterior doors to open at the same time. The installation

of one or more revolving doors in the building entrance shall not eliminate the requirement that a vestibule be provided on any doors adjacent to revolving doors.

C402.4.8 Recessed lighting. Recessed luminaires installed in the *building thermal envelope* shall be sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires shall be IC-rated and *labeled* as having an air leakage rate of not more than 2.0 cfm (0.944 L/s) when tested in accordance with ASTM E 283 at a 1.57 psf (75 Pa) pressure differential. All recessed luminaires shall be sealed with a gasket or caulk between the housing and interior wall or ceiling covering.

2011 National Electrical Code

300.21 Spread of Fire or Products of Combustion. Electrical installations in hollow spaces, vertical shafts, and ventilation or air-handling ducts shall be made so that the possible spread of fire or products of combustion will not be substantially increased. Openings around electrical penetrations into or through fire-resistant-rated walls, partitions, floors, or ceilings shall be fire-stopped using approved methods to maintain the fire resistance rating.

> *Informational Note: Directories of electrical construction materials published by qualified testing laboratories contain many listing installation restrictions necessary to maintain the fire-resistive rating of assemblies where penetrations or openings are made. Building codes also contain restrictions on membrane penetrations on opposite sides of a fire resistance-rated wall assembly. An example is the 600-mm (24-in.) minimum horizontal separation that usually applies between boxes installed on opposite sides of the wall. Assistance in complying with 300.21 can be found in building codes, fire resistance directories, and product listings.*

314.20 In Wall or Ceiling. In walls or ceilings with a surface of concrete, tile, gypsum, plaster, or other non-combustible material, boxes employing a flush-type cover or faceplate shall be installed so that the front edge of the box, plaster ring, extension ring, or listed extender will not be set back of the finished surface more than 6 mm (1⁄4 in.).

In walls and ceilings constructed of wood or other combustible surface material, boxes, plaster rings, extension rings, or listed extenders shall be flush with the finished surface or project therefrom.

314.23 Supports. Enclosures within the scope of this article shall be supported in accordance with one or more of the provisions in 314.23(A) through (H).

> **(A) Surface Mounting.** An enclosure mounted on a building or other surface shall be rigidly and securely fastened in place. If the surface does not provide rigid and secure support, additional support in accordance with other provisions of this section shall be provided.

314.25 Covers and Canopies. In completed installations, each box shall have a cover, faceplate, lamp holder, or luminaire canopy, except where the installation complies with 410.24(B).